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| Grade 11 Chemistry (University Preparation, SCH3U) | | | Unit: Chemical Reactions | | **Review Activity – Games Tournament- Pick a Card** | |
| **Big Ideas**  Chemicals react in predictable ways. | | | | **Materials and Resources:**  The quantities of the following materials will depend on individual class sizes.   * Set of 28 cards for each group (depending on number of students need 3 students per group) * Scissors (for cutting out templates) * Teacher Notes attached **(Appendix B1)** * Student Instructions Sheet + Answer Key (one per group) **(Appendix B2, B5)** * Recording Sheet (Class set)   **Prior Knowledge:**   * Naming and writing chemical formulas * Writing balanced chemical equations for a * given reaction * Identifying the six different types of chemical reactions * Key Terms: oxides, double displacement, single displacement, synthesis, decomposition | | |
| **Learning Goals:**   * Review key concepts learned throughout the unit * Identify strengths and weaknesses with the material | | | |
| **Relevant Ministry Expectations:**  C2.1, C2.2, C2.3, C2.4, C2.5, C2.6, C3.1, C3.2, C3.3 | | | |
|  |  | **T/L Strategies** | | | | **Assessment** |
|  | **B. Action**  **(40 minutes)** | **-**The activity is designed as a **games tournament** and will allow all of the students to participate  **-**Students will work in a **home team** of three and review the information learned (Teacher can assign these groups based on different strengths)  -Break into **tournament groups** where one student from each group gets together with two students each from one other group ***(Numbered Heads 1-3)***  -Shuffle the cards and hand out a deck to each tournament group  **Note:** Template for the cards is attached, they need to be cut-out and can be placed on construction paper if needed **(Appendix B3)**  - Each student will receive a recording sheet and at the end the home teams will add up each of their final totals and hand it in (**Appendix B4)** | | | | **Assessment for Learning:** This will serve as formative/diagnostic assessment for the teacher because based on the recording sheets the teacher can identify how all the students are doing and how comfortable they are with the material.  **Assessment as learning:** Students will get to self-assess how comfortable they are with the material prior to the test and because most (if not all) of the topics are covered by the activity students can identify their strengths and weaknesses. This will give them the opportunity to know which concepts they need to focus more on before the unit test. |

***Appendix B1:***

**Teacher Notes:**

***Instructions:***

This activity is designed as a review or check for understanding of the content covered in the “Chemical Reactions” unit. Students will work in a **home team** of three and review the information learned. They will then break into **tournament groups** where one student from each group gets together with two students each from one other group. A set of 24 questions in total has been created, because there are six questions for each suit (ace-6). Therefore each deck will contain 24 questions and also four jacks. The jacks will act as wild cards. Shuffle the cards and hand them out to each tournament group. Each tournament group will have one deck of cards (ace to six of each suit and four jacks) one answer handout and one recording sheet. Note: The template for the cards is attached, they need to be cut-out and can be placed on construction paper if needed. A sample recording sheet is also attached, each student will receive a recording sheet and at the end the home teams will add up each of their final totals and hand it in.

***Appendix B2.***

***Student Instruction Sheet:***

1. Letter off students A, B, C. A will be the teacher, B will be the student, C will be the recorder.
2. The roles rotate after each question.
3. The student draws a card and shows the group (e.g. the six of Diamonds).
4. Person A reads the question.
5. Person B thinks and responds and Person A checks to see if the answer is correct or incorrect.
6. If the answer is correct, the recorder places a checkmark in the box.
7. If it is incorrect, a dash (-) is placed in that space.
8. If a student draws a Jack, then they draw another card. If they answer correctly they get double points. If they draw another Jack then the question is doubled again (worth four points) and so forth.
9. When finished students return to their home groups, add up scores and hand in the team total to the teacher.

***Appendix B3:***

**Template for Hearts**



Describe four clues that indicate a chemical reaction has taken place.

**True or False**

In a double displacement reaction, a highly soluble product forms a precipitate.

Balance the following chemical equation:

P + O­2 🡪 P2O5





Write the chemical formula for the following compound and predict the solubility of this compound in water:

Barium sulfate

List the two types of combustion:

Write out the reaction when the following two reactants are combined and indicate if a precipitate will form:

Na2S(aq) + Pb(NO3)2(aq)🡪





**HEARTS**



Can be used as the other side of the card.

**Template for Spades**



Predict the products of the following reaction:

MgCO3(aq) + H2SO4(aq) 🡪

Balance the following chemical equation:

FeCl3 + NaOH 🡪 Fe(OH)3 + NaCl

What occurs in a synthesis reaction?







**True or False**

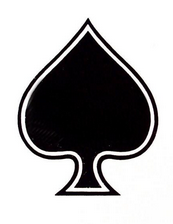
A neutralization reaction is a type of double displacement reaction.

Small pieces of calcium are added to water. Predict if a reaction will occur and write a chemical equation.

What is the general equation for neutralization?



**SPADES**



**Template for Diamonds**



Hydrogen peroxide (H2O2) forms gas bubbles when it is added to blood. The other reaction product is water. Inserting a glowing splint into a sample of gas causes the splint to relight.

🡪identify the gas

🡪classify reaction

🡪write a balanced

equation for the reaction

Write the balanced chemical equation for the reaction of these pairs of reactants:

Aluminum and oxygen

Balance the following chemical equation:

AgNO3 + H2S 🡪 Ag2S + HNO3







What is an oxide?

Identify the following reaction:

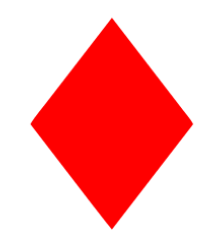
2C2H2 (g) + 5O2 (g) 🡪 4 CO2­ (g) +2H2O(g) + energy

**True or False**

A neutralization reaction results in a solution that has a pH higher than 8.



**DIAMONDS**



**Template for Clubs**





If solid zinc is combined with silver nitrate solution, what type of reaction will occur?

a) double displacement

b) synthesis

c) decomposition

d) single displacement



Predict the products of this reaction and identify the type of reaction:

2KClO3(s) 🡪

Write the chemical reaction for the following reaction. Write no reaction if you predict that no reaction occurs.

1. Ni(s) + Al(NO3)3 🡪





How are single and double displacement reactions different?



An aqueous solution of lead (II) nitrate is mixed with aqueous sodium iodide.

* 1. Predict whether these two compounds will react
  2. Balance equation and list the precipitates that will form in in this reaction





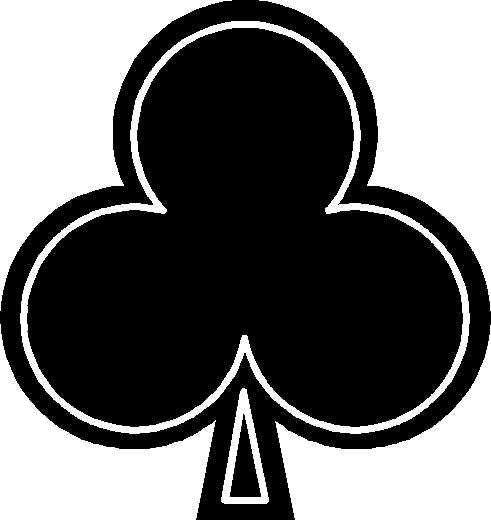
**True or False**

When solid zinc is combined with aqueous sulfuric acid, zinc displaces sulfur.





**CLUBS**



**Template for Jacks:**





***Appendix B4.***

**Recording Sheet:**

**Team Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Suit** | **Question Number** | | | | | | **Total** |
|  | **1** | **2** | **3** | **4** | **5** | **6** |  |
| **Hearts** |  |  |  |  |  |  |  |
| **Clubs** |  |  |  |  |  |  |  |
| **Spades** |  |  |  |  |  |  |  |
| **Diamonds** |  |  |  |  |  |  |  |
| **Final Total** |  |  |  |  |  |  |  |

***Appendix B5.***

**Answer Key**

**Hearts:**

1. 4P + 5O2 🡪 2P2O5
2. False
3. -Unexpected change in colour

-Energy is released or absorbed

- A gas is produced

- A precipitate forms

1. Pb(NO3)2 (aq) + Na2S (aq) 🡪PbS(s) + 2NaNO3 (aq)
2. Incomplete and complete
3. BaSO4 and its insoluble in water. Therefore, forms a precipitate.

**Spades:**

1. Synthesis reaction: A reaction in which two reactants combine to make a larger or more complex product A+ B 🡪 AB
2. FeCl3 + 3NaOH 🡪 Fe(OH)3 + 3NaCl
3. MgCO3(aq) + H2SO4(aq) 🡪 MgSO4(aq) + H2CO3(aq)
4. Acid + Base 🡪 Salt and Water
5. Ca(S) + H2O(l)🡪 Ca(OH)2 + H2(g)
6. True

**Diamonds:**

1. 2AgNO3 + H2S 🡪 Ag2S + 2HNO3
2. 4Al + 3O2 🡪 2Al2O3
3. Gas: O2

Reaction: Decomposition

Equation: 2H2O2 🡪2 H2O(l) + O2(g)

1. False, pH is close to 7 (neutral.)
2. Complete combustion
3. An oxide is a compound of any element that is combined with oxygen.

**Clubs:**

1. No reaction
2. 2KClO3(s) --> 2KCl(s) + 3O2(g)
3. Single displacement
4. False, hydrogen gas forms. (Zn(s)+H2SO4(aq)------- ZnSO4(aq)+H2(g))
5. Pb(NO3)2(aq) + 2NaI(aq) 🡪 2NaNO3(aq)  + PbI2(s)
6. Double displacement reactions are reactions in **which elements in two compounds** displace each **other producing two new compounds** whereas in single displacement **an element replaces another element** in a compound **and a new compound and a new elemen**t are produced.